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ABSTRACT

This kit contains observation matrices for on-going assessment and end of the year evaluation for grades 1 through 8. Each matrix is divided into the areas of numeration, geometry, patterns, measurement, problem solving, data, and computation. Performance indicators indicate four levels of proficiency where Level I indicates minimal performance and Level III indicates proficient performance. (JRH)

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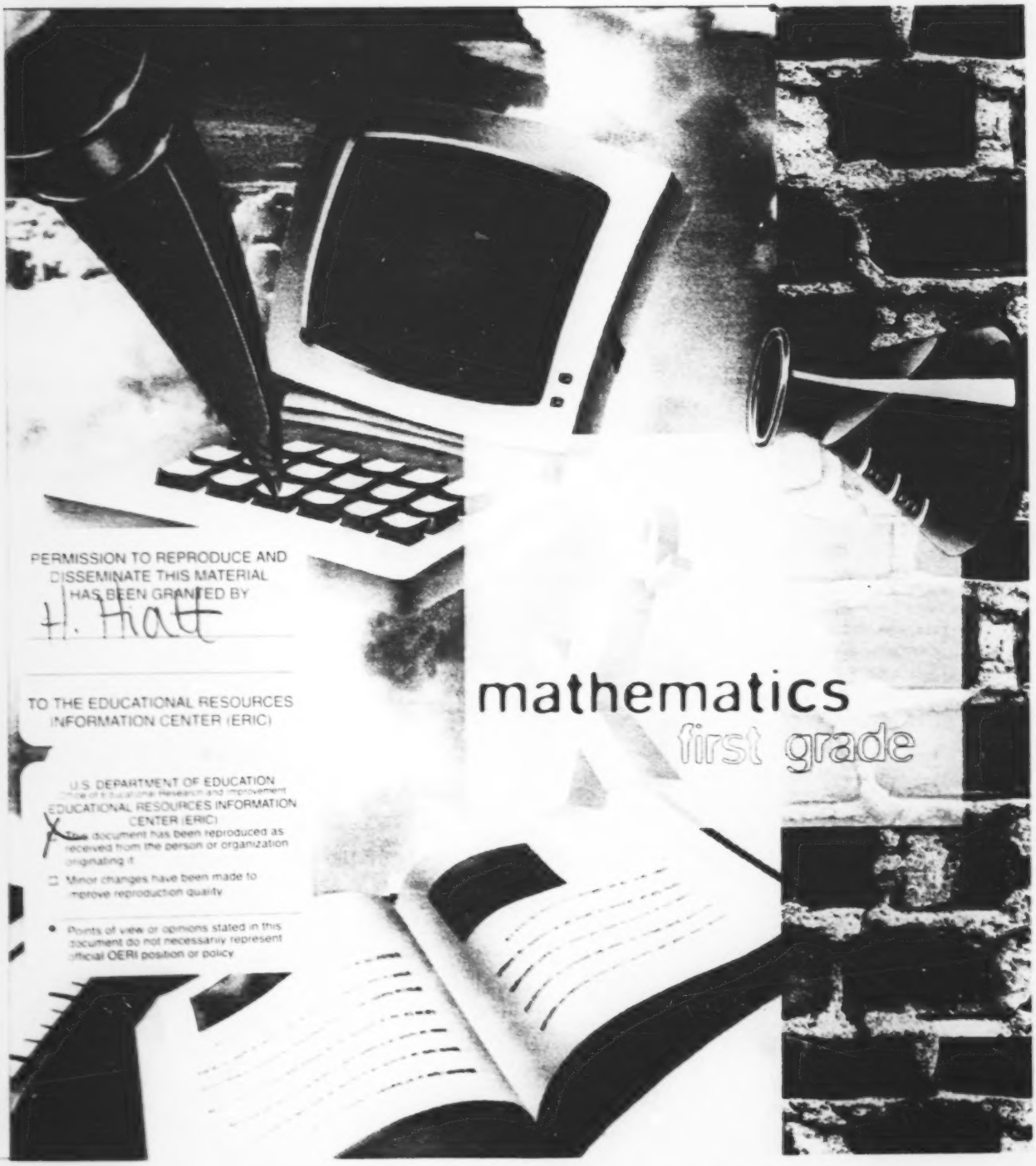
ED 408 189

# First Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# First Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| Performance Indicators | Communication | Geometry | Patterns | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|
| **Level IV**<br>• consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies Level III competencies in more challenging situations | • reads, writes and counts beyond 100; reads number words beyond 10<br>• recognizes sets to 5 without counting<br>• identifies original positions beyond tenth<br>• compares, sequences numerals beyond 100<br>• skip counts by 2s, 3s, 5s, 10s and relates to repeated addition<br>• can predict patterns beyond 10s and 1s | • creates models of plane and solid figures<br>• identifies, makes figures with line symmetry<br>• matches congruent figures<br>• replicates 3-dimensional designs using models<br>• groups by attributes geometric figures | • classifies by more than one attribute; describes rules in sorting<br>• defines, extends, translates and corrects errors in patterns (numbers, words, shapes)<br>• uses ordinal numbers in conversation<br>• uses patterns to extend numerical sequences beyond memorized numbers and to make predictions<br>• uses patterns as a problem-solving strategy | • weighs to nearest pound, kilogram<br>• reads thermometer to whole degree<br>• tells time to half-hour; uses clocks, calendar to solve problems<br>• identifies value of sets of coins, uses money and make change<br>• uses ruler to measure accurately to the nearest inch or centimeter<br>• uses appropriate tools and procedures to solve problems<br>• explores area and perimeter<br>• estimates money needed for purchases<br>• uses appropriate language, symbols for time-related ideas | • explores different methods of solving problems, using a variety of strategies<br>• initiates, plans and carries out problem solving tasks, evaluating results<br>• uses mental math and makes reasonable estimates<br>• uses calculator as a tool<br>• solves spatial visualization problems<br>• describes process to solve problems<br>• solves simple logic problems | • collects, sorts, organizes, and displays data in a variety of ways<br>• summarizes, interprets data; makes predictions<br>• collects, displays data over time accurately<br>• locates positions on number lines and grids<br>• completes simple experiments, describes results, makes predictions<br>• takes initiative in collecting data for personal use | • uses strategies for adding, subtracting when solving problems<br>• tells missing addends for addition facts<br>• can model, explain 2-digit addition, subtraction<br>• adds, subtracts 2-digit numbers using own strategies<br>• adds, subtracts 10 mentally<br>• models repeated addition and sharing equally<br>• recalls almost all addition, subtraction facts<br>• explains the process relating symbols to operations |
| **Level III (Proficient)**<br>**• exhibits consistent performance**<br>**• shows conceptual understanding**<br>**• applies strategies in most situations**<br>**• responds with appropriate answer or procedure**<br>**• completes tasks accurately**<br>**• needs minimal assistance**<br>**• takes appropriate risks**<br>**• makes applications**<br>**• exhibits fluency**<br>**• shows some flexibility in thinking**<br>**• works with confidence**<br>**• recognizes cause and effect relationships**<br>**• applies models, and explains concepts** | **• makes, compares, orders sets and numerals**<br>**• reads, writes, represents numbers in a variety of ways; reads number words 0 to 10**<br>**• identifies ordinal positions**<br>**• recognizes one more, less, before, after, between**<br>**• rote counts by 1s, 10s, 5s, 2s**<br>**• makes reasonable estimates of "how many"**<br>**• groups objects into tens and ones; records**<br>**• recognizes models; builds 2-digit numbers; writes numerals**<br>**• uses counting strategies; 1-to-1 correspondence, counting on, tallying, grouping** | **• identifies open and closed figures**<br>**• identifies, describes, models plane figures (i.e. circles, squares, rectangles, triangles, hexagons, trapezoids)**<br>**• describes likenesses and differences**<br>**• identifies, describes solids (i.e. cubes, cylinders, spheres, rectangular prisms)**<br>**• recognizes examples of plane, solid figures in the environment**<br>**• uses comparative, directional, positional words** | **• describes objects by their attributes; compares and orders**<br>**• sorts by given attribute, by more than one attribute; explains sorting rules**<br>**• sorts objects by own rule; explains sorting**<br>**• copies, continues patterns; translates into different forms**<br>**• creates patterns with actions, words, objects**<br>**• finds and corrects errors in patterns**<br>**• identifies patterns in the environment** | **• compares objects, uses appropriate vocabulary**<br>**• uses nonstandard units to measure length, weight, capacity**<br>**• identifies equal, unequal parts**<br>**• uses time-related words in daily vocabulary**<br>**• names, orders days of week; names months of year**<br>**• uses information on a calendar**<br>**• tells time to nearest hour (face, digital clock)**<br>**• identifies, gives values of penny, nickel, dime**<br>**• identifies coins needed to buy items; make different sets with same value** | **• uses calculator with situations beyond computational expectations**<br>**• uses visual memory; solves spatial visualization puzzles; copies simple designs accurately**<br>**• estimates, suggests reasonable solutions to problems**<br>**• uses models or "act out" to solve problems**<br>**• uses drawings, diagrams to solve problems**<br>**• uses guess and check to solve problems** | **• collects data for concrete, pictorial, and symbolic graphs**<br>**• organizes and displays information as a group activity**<br>**• answers questions about charts, graphs**<br>**• makes predictions based on experiences**<br>**• participates in simple data collection activities** | **• models addition, subtraction (as take-away and comparison)**<br>**• models combinations to 10**<br>**• creates and solves problems using addition, subtraction**<br>**• relates addition, subtraction to symbolic notation, writes equations**<br>**• uses counting strategies to find sums, differences**<br>**• memorizes easy addition and subtraction facts to ten**<br>**• models three single-digit addition; records**<br>**• models 10 more, less; 2-digit operations with multiples of 10** |
| **Level II**<br>• exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• completes tasks appropriately and accurately sometimes<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some Level III competencies but is inconsistent | • demonstrates some understanding of more, less, before, after, between<br>• requires guidance in skip counting<br>• represents numbers in limited ways<br>• uses different counting strategies but is not consistently accurate<br>• compares and orders sets and numerals of single-digit numbers; has difficulty with some 2-digit numbers | • uses a limited number of directional, positional, comparative words<br>• identifies some plane and solid figures but may not recognize them in the environment<br>• creates models of plane figures with assistance | • describes objects by their attributes and compares with teacher guidance<br>• sorts by given attributes<br>• explains sorting rule inconsistently<br>• copies and continues simple patterns<br>• has difficulty creating patterns<br>• finds errors in patterns<br>• corrects errors in patterns with teacher assistance | • compares objects often using inappropriate vocabulary<br>• uses nonstandard units at times inaccurately<br>• identifies unequal parts<br>• sequences time-related events<br>• names days of the week<br>• difficulty naming months<br>• displays limited use of information from a calendar<br>• tells time to nearest hour on digital clock only<br>• identifies penny, nickel, dime; confuses values<br>• matches coins to buy common items (i.e. lunch items) | • performs basic operations using the calculator<br>• solves spatial visualization puzzles and copies simple designs with some errors<br>• estimates are within a reasonable range when related to a specific problem<br>• tends to use single strategy for solving problems<br>• makes guesses to solve problems but neglects to check results | • requires teacher guidance to gather data<br>• displays data inaccurately<br>• displays confusion when answering questions about charts and graphs<br>• makes inappropriate predictions based on experiences | • needs additional practice in modeling, recording combinations to 10<br>• demonstrates inconsistency when modeling subtraction as comparison<br>• models three 1-digit addition with teacher assistance<br>• shows some understanding for modeling 10 more, less<br>• requires guidance to create and solve addition and subtraction problems<br>• has difficulty modeling addition and subtraction with multiples of 10<br>• exhibits inconsistency with recall of easy addition and subtraction facts |
| **Level I**<br>• exhibits minimal performance<br>• shows limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• completes tasks appropriately and accurately infrequently<br>• needs assistance, guidance and modified instruction | • uses counting strategies<br>• identifies, creates sets with small numbers<br>• recognizes some numerals<br>• identifies "one more than," "one less than" but is inconsistent | • recognizes circles<br>• identifies likeness as by color and size<br>• models plane figures with assistance<br>• needs additional clues to respond to directional, positional words | • demonstrates limited understanding of attributes<br>• inconsistently sorts by given attribute<br>• unable to state sorting rule<br>• copies simple patterns<br>• creates patterns with teacher guidance<br>• unable to identify and correct patterns | • identifies equal parts inconsistently<br>• unable to use calendar; name days of week, months<br>• needs assistance reading clocks<br>• identifies coins and their value inconsistently<br>• has limited understanding of nonstandard measurement and comparison | • needs assistance in using a calculator<br>• has difficulty copying simplest designs depicting spatial relationships<br>• makes unreasonable estimates or inappropriate guesses to solve problems<br>• needs assistance with models, drawings to solve problems | • demonstrates limited conceptual understanding of collecting data<br>• needs frequent assistance to answer questions about charts and graphs | • demonstrates very limited understanding when modeling subtraction<br>• needs modified instruction to use counting strategies<br>• demonstrates minimal recall of easy addition and subtraction facts<br>• shows limited evidence of understanding of 10 more, less<br>• needs frequent assistance to create, solve problems or record equations |





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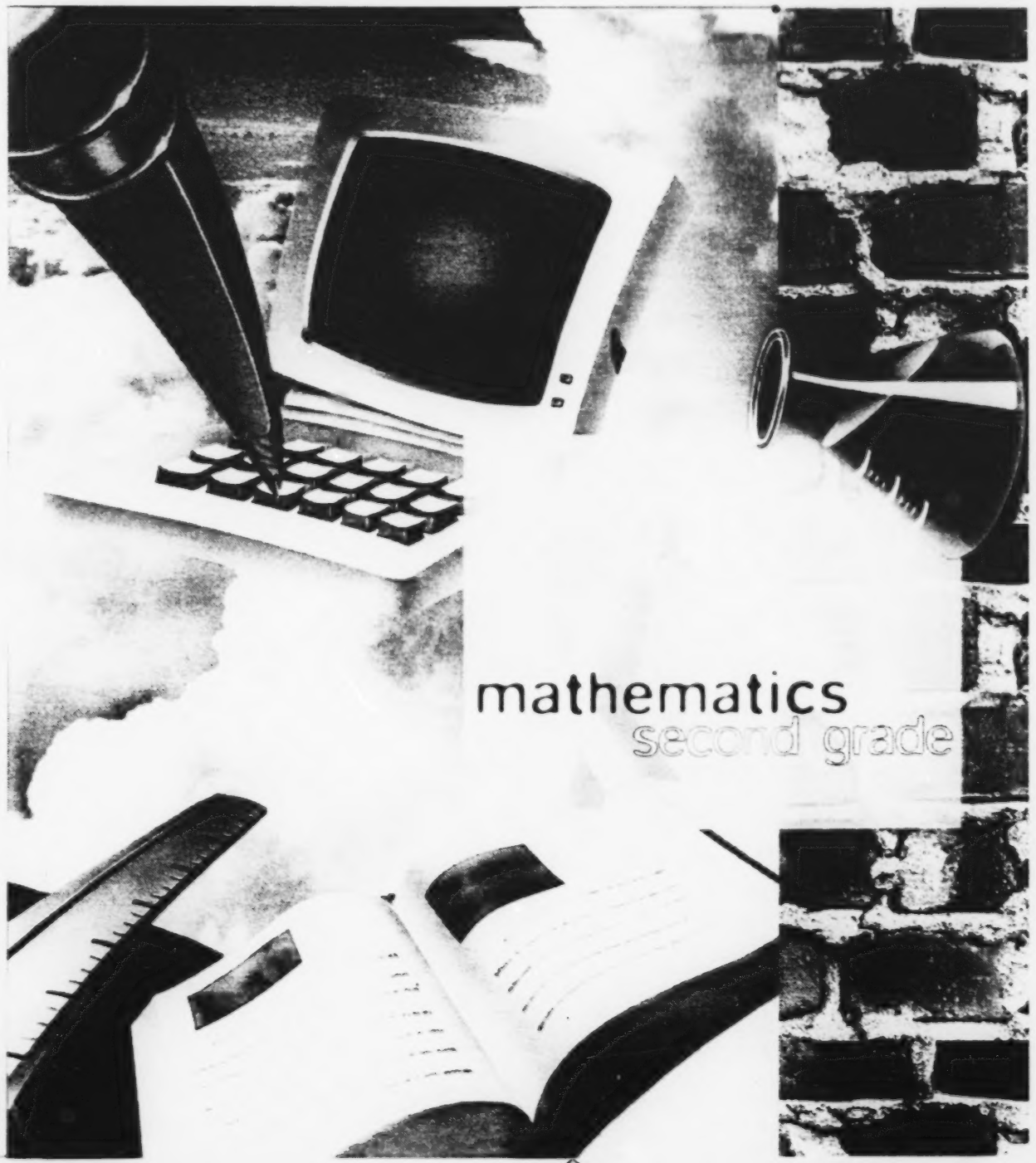
## Teacher Comments

# Second Grade Matrix for On-Going Assessment and End of the Year Evaluation

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# Second Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| | Performance Indicators | Numeration | Geometry | Patterns | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|---|
| Level IV | • consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • recognizes multiple uses of numbers and classifications<br>• models, explains and compares fractions pictorially<br>• classifies numbers by odd and even<br>• can predict patterns beyond ability to model<br>• extends place value concepts to 4-digit numbers and describes patterns in the place value system | • describes and compares characteristics of 2-dimensional and 3-dimensional figures<br>• identifies, models and explains symmetry and congruence<br>• describes geometry in the environment<br>• describes rules for grouping various geometric solids | • uses pattern concepts to extend and create geometrical and numerical sequences<br>• uses patterns to make predictions and solve problems beyond grade-level expectations<br>• uses patterns as a problem-solving strategy | • uses appropriate tools and procedures to solve real-life problems<br>• explores, explains concepts of area and perimeter<br>• estimates, determines amounts of money needed for purchases, makes change<br>• tells time to minute, five minute intervals<br>• uses appropriate language and symbols to express time-related ideas | • develops and applies new and familiar strategies including technology to solve a variety of problems<br>• evaluates, verifies and interprets results<br>• searches for alternative solutions<br>• discusses process in multistep problems<br>• initiates, plans and carries out problem solving tasks | • uses a variety of charts and graphs, surveys and experiments to draw conclusions; represents and explains data<br>• explores coordinate graphs and timelines<br>• takes initiative in collecting data for personal use<br>• summarizes with great detail | • explains the processes relating symbols to operations<br>• explores and explains multiplication and division<br>• solves 2-digit and 3-digit addition and subtraction problems accurately with and without a calculator<br>• uses addition and subtraction facts fluently |
| Level III (Proficient) | **• exhibits consistent performance<br>• shows conceptual understanding<br>• applies strategies in most situations<br>• responds with appropriate answer or procedure<br>• completes tasks accurately<br>• needs minimal assistance<br>• takes appropriate risks<br>• makes applications and extensions<br>• exhibits fluency<br>• shows some flexibility in thinking<br>• works with confidence<br>• recognizes cause and effect relationships<br>• can apply, model and explain concepts** | **• rote counts beyond 100<br>• uses strategies to estimate, compare and order numbers<br>• groups 100s, 10s and 1s<br>• identifies, uses 10 more, less<br>• names nearest multiple of 10<br>• skip counts by 2s, 5s, 10s and relates to repeated addition<br>• groups objects by 3s and 4s<br>• divides regions and sets into halves<br>• explains odd, even numbers using objects<br>• models 3-digit numbers** | **• identifies, describes, makes plane and solid figures<br>• identifies, makes figures with line symmetry<br>• matches congruent figures<br>• replicates 3-dimensional designs using models<br>• recognizes square corners, geometric figures in the environment<br>• recognizes plane, solid figures regardless of orientation** | **• classifies by more than one attribute; describes rules in sorting<br>• defines, extends, translates and corrects errors in patterns (numbers, words, shapes)<br>• applies ordinal numbers consistently<br>• uses patterns to extend numerical sequences beyond memorized numbers<br>• uses patterns to make predictions** | **• describes, estimates and measures length, weight, capacity, temperature using standard units correctly<br>• estimates and informally rounds to nearest whole measurement unit<br>• uses a ruler with confidence<br>• covers areas with nonstandard units appropriately<br>• tells time to nearest half hour; uses clocks and calendar to solve problems accurately<br>• identifies coins, uses money and makes change with confidence** | **• uses calculator appropriately to solve problems; recognizes when mental math is more efficient<br>• solves spatial visualization problems with ease<br>• makes reasonable estimates<br>• describes process to solve problems<br>• solves simple logic problems<br>• uses multiple strategies comfortably: makes models, "acts out," makes drawings, diagrams and organized lists, guess and check** | **• collects, sorts, organizes and displays data in a variety of ways<br>• summarizes, interprets data, makes predictions individually and appropriately<br>• collects, displays data over time<br>• locates positions on number lines and grids<br>• completes simple experiments, describes results, makes predictions** | **• uses strategies to add, subtract numbers and solve problems<br>• names missing addends for addition facts<br>• models, records, explains 2-digit addition, subtraction and 3 single-digit addition<br>• adds, subtracts two-digit problems with, without renaming using manipulatives<br>• adds, subtracts 10 mentally<br>• models repeated addition and sharing equally; relates to multiplication, division<br>• memorizes addition, subtraction facts** |
| Level II | • exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • demonstrates some place value understanding but has difficulty applying concepts<br>• reads, writes and represents numbers in a few ways<br>• gives inconsistent responses based on estimation<br>• groups objects into 10s and 1s as well as into groups of 2s or 5s and rote counts<br>• has difficulty modeling 3-digit numbers | • identifies and creates models of some plane, solid figures<br>• identifies simple figures with line symmetry<br>• usually matches congruent figures<br>• uses geometric vocabulary when prompted | • demonstrates understanding of simple patterns<br>• uses patterns to continue familiar numerical sequences<br>• uses ordinal numbers less than 10, orders objects and events<br>• sorts by single attribute; has difficulty naming rules<br>• creates simple patterns but does not make predictions | • often lacks precision describing, estimating and measuring length, weight, capacity and temperature using standard units<br>• identifies coins and uses money with some difficulty<br>• needs guidance to cover area with nonstandard units<br>• tells time to nearest half hour inconsistently; uses clock, calendar to solve very simple problems | • uses calculators to solve problems when prompted<br>• solves spatial visualization problems with assistance<br>• suggests reasonable solutions to problems with some teacher guidance<br>• uses limited strategies to solve problems | • collects, organizes and displays data in simple charts, and graphs<br>• summarizes, compares, and interprets data in group<br>• locates points on a number line with some difficulty<br>• make predictions based on experiences<br>• explores positions on grid | • models, records, explains, and solves addition and subtraction facts<br>• models with assistance repeated addition and sharing equally<br>• models addition, subtraction of 2-digit problems with, without renaming but with some errors<br>• knows only easier addition and subtraction facts |
| Level I | • exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes task appropriately and accurately<br>• needs assistance, guidance and modified instruction | • makes place value errors (ex. writes 32 for 23)<br>• has difficulty reading and using numbers in context<br>• inconsistent use of counting strategies<br>• works with single-digit numbers but has difficulty with larger numbers | • recognizes only a few plane, solid figures<br>• limited use of directional, positional words<br>• describes likenesses and differences but does not attend to multiple attributes | • demonstrates limited use of attributes, sorting rules<br>• finds, corrects simple patterns<br>• identifies single-digit ordinal numbers<br>• needs guidance and, or specific directions in identifying, creating, and continuing patterns | • uses nonstandard and some standard measurement but lacks accuracy<br>• identifies penny, nickel, and dime<br>• identifies time to hour<br>• displays limited use of information from calendar<br>• inconsistently names days of week and months of year | • has difficulty communicating mathematical understandings<br>• creates or solves story problems within a group rather than individually<br>• has difficulty completing spatial visualization problems<br>• needs help to estimate or solve problems | • gathers and organizes data with assistance<br>• needs assistance to display data graphically<br>• answers simple questions about charts, graphs with guidance | • has difficulty modeling addition and subtraction<br>• has difficulty applying addition, subtraction to problems<br>• demonstrates minimal recall of easier addition and subtraction facts |





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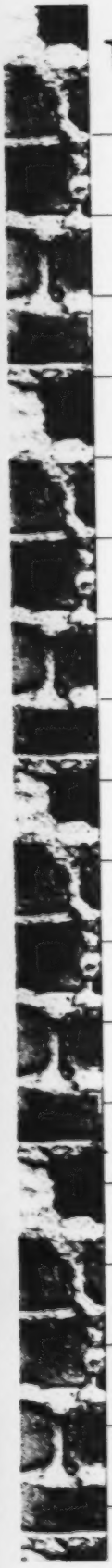
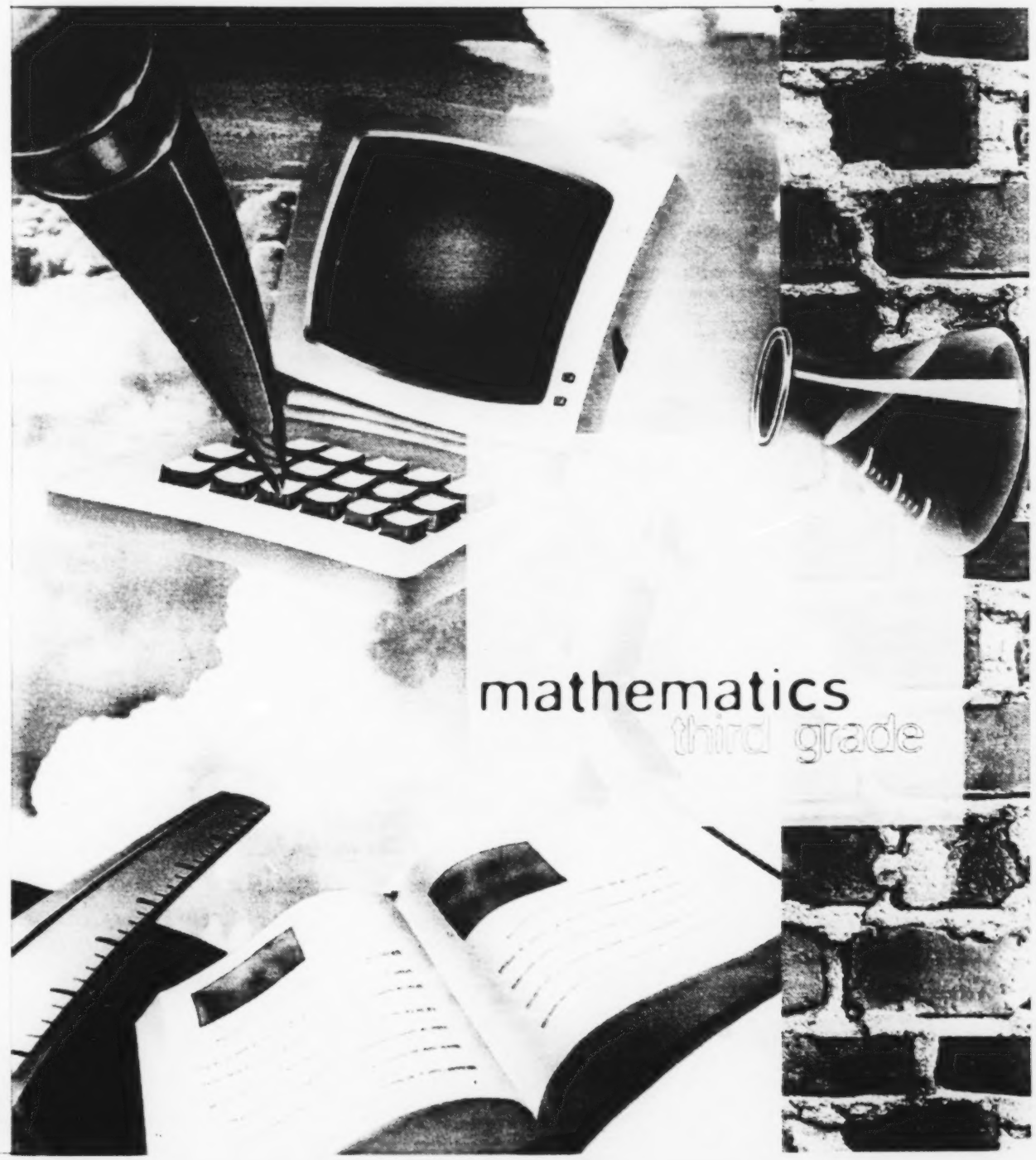


Teacher Comments

# Third Grade Matrix for On-Going Assessment and End of the Year Evaluation

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# Third Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| Performance Indicators | Numeration | Geometry | Patterns/Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|
| **Level IV**<br>• consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • expresses numbers in a variety of forms showing conceptual understanding of the base ten system<br>• applies knowledge of multiples of 10s, 100s to 100s and 1000s<br>• uses mathematical language to describe fractions in contexual situations<br>• explores and demonstrates understanding of equivalent fractions | • create models of 3-dimensional objects<br>• uses appropriate geometric vocabulary (sides, vertices, faces) when describing rules for grouping<br>• explores turns, flips, and slides with plane figures<br>• describes distinctive features of geometric figures | • generates own tables; finds patterns and extends the table<br>• uses intuitive methods to find mathematical relationships among numbers (growing or repetitive) | • shows confidence and initiative in choosing, using appropriate tools (length, capacity, and weight)<br>• explores elapsed time<br>• uses appropriate language and proper notation to express money amounts | • develops an organized approach in solving problems in all strands<br>• uses patterns and logical reasoning in solving problems<br>• communicates an understanding of a problem through oral and written discussion<br>• justifies a solution to a problem, clearly communicating thinking used in solving the problem | • displays data in a variety of ways including stem and leaf, and circle graphs<br>• plans and carries out independent data investigations<br>• uses ordered pairs in a variety of engaging situations | • relates multiplication facts to division facts<br>• uses mental math skills to approximate answers and to solve problems<br>• memorizes all multiplication facts/tables to 12s<br>• solves real-life problems (including multi-steps) using all operations |
| **Level III (Proficient)**<br>• **exhibits consistent performance**<br>• **shows conceptual understanding**<br>• **applies strategies in most situations**<br>• **responds with appropriate answer or procedure**<br>• **completes tasks accurately**<br>• **needs minimal assistance**<br>• **takes appropriate risks**<br>• **makes applications and extensions**<br>• **exhibits fluency**<br>• **shows some flexibility in thinking**<br>• **works with confidence**<br>• **recognizes cause and effect relationships**<br>• **can apply, model and explain concepts** | • **models 3-digit numbers; uses standard and expanded notations**<br>• **reads, writes whole numbers through 1000**<br>• **estimates, compares, orders numbers through 1000**<br>• **determines odd and even numbers**<br>• **models and can explain fractions and mixed numbers; relates notation to models and pictures**<br>• **demonstrates confidence in using numbers**<br>• **approximates multiples of 10 and 100** | • **classifies plane and solid figures; describes rules for grouping**<br>• **constructs with cubes to match a given model or picture**<br>• **describes a 3-dimensional object from different perspectives**<br>• **identifies and models symmetry**<br>• **identifies, investigates congruence with materials, drawings, computer graphics**<br>• **describes geometry in the environment** | • **organizes objects or ideas into groups; describes attributes and rules for sorting**<br>• **continues sequences beyond memorized, modeled numbers**<br>• **extends, creates geometric and numerical sequences**<br>• **describes pattern properties and gives similar examples**<br>• **uses patterns for skip counting, multiplication, seriation, predictions, problems solving** | • **makes reasonable estimates of measurements and uses appropriate tools**<br>• **measures accurately using metric and standard units for length, capacity, weight**<br>• **tells, writes time to minutes**<br>• **compares units within the same measurement system**<br>• **evaluates coins; creates equivalent amounts; makes change less than $5; solves money problems**<br>• **solves real-life problems using measurement concepts and procedures** | • **identifies and describes problems in given situations**<br>• **develop stories to illustrate problem situations and number sentences**<br>• **solves routine and non-routine problems using a variety of strategies and appropriate technology**<br>• **describes processes used in finding solutions; suggested alternate strategies, methods**<br>• **discusses reasonableness of solutions and completeness of answers** | • **gathers, organizes data from surveys, experiments; including data over time**<br>• **displays data, summarizes and explains information**<br>• **interprets, makes pictographs, bar graphs**<br>• **uses charts, graphs as sources of information; identifies main idea, draws conclusions, makes predictions**<br>• **uses letters, numbers to locate points on a coordinate grid**<br>• **uses a time line** | • **illustrates connection between models, algorithms**<br>• **models subtraction with zeros; demonstrates proficiency with 2-digit and 3-digit addition and subtraction**<br>• **computes total cost of items up to $5; change from $5**<br>• **demonstrates multiplication properties**<br>• **memorizes multiplication facts, tables: 2s, 5s, 1s, 10s, 9s,**<br>• **models division with 1-digit divisor, sharing equally, and repeated subtraction**<br>• **solves real-life problems using all operations** |
| **Level II**<br>• exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • models 3-digit numbers, but has difficulty relating standard and expanded notations<br>• compares numbers but is inconsistent in ordering numbers to 1000<br>• has difficulty reading and writing 3-digit numbers<br>• is tentative in application of numbers and concepts<br>• can approximate multiples of 10 or 100 using models<br>• shows limited understanding of fractions and mixed numbers | • classifies plane and solid figures with simple rules<br>• constructs with cubes to match a given model with teacher guidance<br>• gives limited descriptions of 3-dimensional object from different perspectives<br>• displays limited use of geometric vocabulary | • organizes objects, ideas in limited ways; describes with simple rules<br>• extends, creates easy geometric and numerical sequences; displays confusion describing patterns<br>• uses patterns, seriation to make obvious predictions | • makes inconsistent estimates of measurements<br>• shows misunderstanding in use of metric and standard units<br>• needs additional time to calculate coins, make equivalent amounts<br>• solves simple money problems but needs assistance making change<br>• is inconsistent telling, writing time to the minute, 5-minute intervals | • solves problems with teacher or peers suggesting a strategy<br>• needs help in explaining problem solving process and using alternative strategies<br>• has difficulty developing stories to illustrate problem situations and number sentences<br>• requires guided teacher discussion to enable student to explain reasonableness of solutions and completeness of answers | • gathers own data but needs assistance organizing<br>• displays data, summarizes and needs assistance with analysis<br>• sometimes interprets/makes graphs using multiple blocks<br>• needs to be reminded of plotting x-axis first<br>• sequences events inconsistently on a time line | • demonstrates limited conceptual understandings of the connection between models and algorithms<br>• shows inconsistent performance modeling, explaining, computing with multi-digit numbers<br>• demonstrates inconsistent memorization of facts<br>• has difficulty understanding repeated subtraction to solve division problems<br>• exhibits inconsistent application of operations for solving problems |
| **Level I**<br>• exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • lacks understanding of standard and expanded notations<br>• inaccurately reads, writes whole numbers to 1000<br>• lacks understanding of multiples of 10 and 100<br>• understands unit fractions such as 1/2 but has difficulty understanding other fractions<br>• is not proficient with many of the previous years objectives | • confuses many geometric vocabulary words<br>• needs assistance to complete geometry objectives<br>• does not recognize geometry in the environment | • unable to organize groups, describe rules, patterns<br>• does not apply pattern concepts<br>• extends, creates simple geometric, numerical sequences with guidance | • does not use ruler accurately<br>• needs modified instruction when using metric and standard units<br>• needs frequent assistance telling, writing time to minutes, quarter hour<br>• exhibits minimal performance evaluating coins, creating equivalent amounts<br>• rarely makes change accurately | • unable to identify and describe problems in given situations<br>• develops unrelated stories to illustrate problem situations and number sentences<br>• unable to solve most problems using a variety of strategies even with assistance<br>• unable to determine reasonableness of answers | • gathers, displays data as part of a group<br>• answers simple, obvious questions about graphs<br>• demonstrates lack of understanding of bar graphs, pictographs<br>• completes graphs using multiple symbols<br>• demonstrates difficulty sequencing events | • makes many errors in addition and subtraction of multi-digit numbers<br>• needs concrete objects to share equally<br>• able to skip count by 1s, 2s, 5s, and 10s but does not relate to multiplication facts<br>• displays misunderstanding of processes when solving problems |



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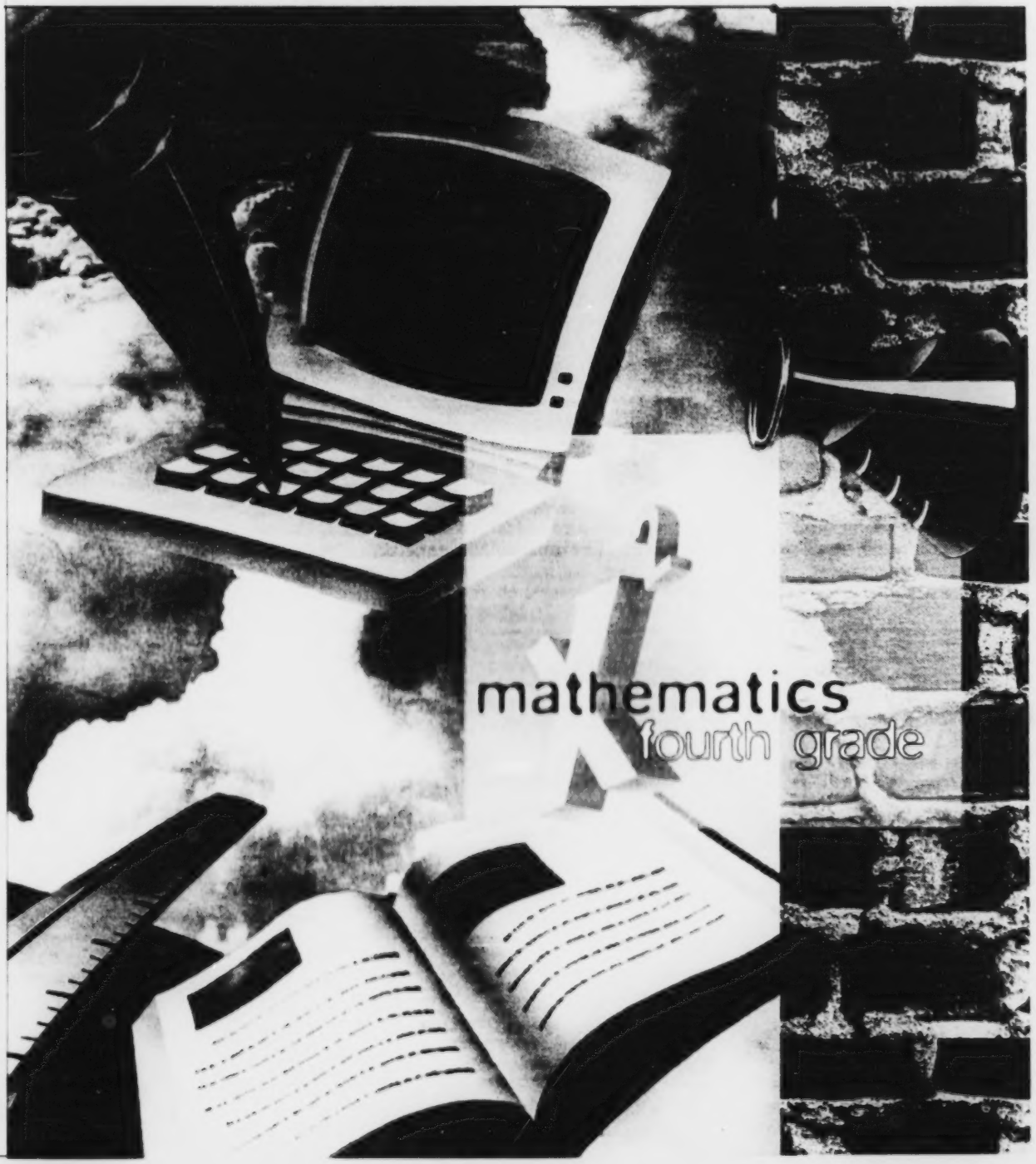
Teacher Comments

# Fourth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation




Public Schools of North Carolina
State Board of Education • Department of Public Instruction

Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# Fourth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| | Performance Indicators | Numeration | Geometry | Patterns | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|---|
| **Level IV** | • consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • extends place-value concepts beyond six digits in various forms<br>• uses a variety of models to represent, compare fractions<br>• creates pictures to show relationships between whole numbers, decimals, and fractions<br>• communicates an understanding of number relationships in everyday situations<br>• gives realistic examples of application of fraction and decimal concepts | • models, explains rotations, reflections, and translations<br>• uses a protractor to draw and measure acute, right, and obtuse angles<br>• creates and explains a pictorial representation or model to illustrate geometric concepts, vocabulary, and figures | • describes and applies patterns in real world and across curriculum areas<br>• creates, extends patterns in tables using rules<br>• generates rules for patterns<br>• makes generalizations from given patterns | • formulates, solves increasingly complex measurement problems involving applications of length, weight, time, money, capacity, temperature, perimeter, area<br>• uses, makes models to demonstrate, explain formulas for area, perimeter of squares, rectangles | • analyzes situations and uses an organized approach to solve non-routine and increasingly complex problems in all strands<br>• uses problem solving processes such as estimating, elaborating, and verifying in everyday situations and across curriculum areas<br>• recognizes multiple ways to solve a problem and chooses efficient strategies | • chooses the best method to display data and explains reasoning<br>• explores increasingly complex displays of data<br>• investigates probabilities by experimenting with random outcomes (i.e. coins, number cubes, spinners) discussing probable results<br>• creates designs on grids, lists ordered pairs<br>• analyzes complex data using range, median, mode, outliers | • recalls, applies multiplication, division facts without hesitation<br>• estimates products; explains and multiplies 2- and 3-digit numbers<br>• explains, uses models to add, subtract fractions with like denominators<br>• estimates results; adds, subtracts fractions with like denominators in the context of problem solving situations<br>• compares whole number remainders in division to decimal remainders using calculator |
| **Level III (Proficient)** | **• exhibits consistent performance<br>• shows conceptual understanding<br>• applies strategies in most situations<br>• responds with appropriate answer or procedure<br>• completes tasks accurately<br>• needs minimal assistance<br>• takes appropriate risks<br>• makes applications and extensions<br>• exhibits fluency<br>• shows some flexibility in thinking<br>• works with confidence<br>• recognizes cause and effect relationships<br>• can apply, model and explain concepts** | **• understands base 10 system; models, compares, orders, writes expanded form to 1 million<br>• rounds numbers appropriately in real-world situations<br>• uses models to represent, compare proper, improper fractions, equivalent fractions, mixed numbers<br>• uses models, pictures to demonstrate, compare decimals to hundredths<br>• uses models to show relations between whole numbers, decimals, fractions<br>• uses numbers to million** | **• identifies properties of polygons, polyhedra, 2-D and 3-D figures<br>• demonstrates turns, flips, and slides<br>• makes models; identifies line segments, midpoints, intersections, parallel, perpendicular lines<br>• illustrates acute, right, obtuse angles<br>• identifies lines, angles in pictures, examples in the environment** | **• identifies, describes patterns in the real world, data collection, geometry, operations, sequence<br>• uses patterns to make predictions, solve problems<br>• uses inverse operations math relationships to solve open sentences<br>• makes, uses, extends tables, geometry and multiplication patterns** | **• uses appropriate units, tools for length, weight, capacity; estimates, compares units within same system<br>• explores and solves elapsed time problems<br>• formulates, solves real life measurement problems<br>• measures on grids perimeter, area of rectangles; approximates area of irregular, regular figures<br>• expresses, compares money amounts appropriately** | **• develops organized approachs in all strands<br>• shows understanding of problems through oral and written discussion<br>• determines if there is sufficient data to solve problems<br>• estimates, justifies, verifies, interprets results to problems<br>• selects appropriate strategies and technologies<br>• discusses alternate methods for obtaining solutions<br>• formulates problems from everyday situations** | **• collects, organizes, displays data from many sources in a variety of ways including line plot, stem and leaf<br>• forms questions, interprets information orally, in writing<br>• describes data using range, median, mode<br>• names, plots ordered pairs<br>• uses ordered pairs in a variety of situations<br>• lists and explains all possible outcomes** | **• estimates, adds, subtracts with multi-digit numbers, including decimals<br>• uses mental math to estimate, solve problems<br>• models, explains the processes of multiplication and division<br>• memorizes multiplication facts; relates to division facts<br>• models properties of multiplication; relates to division<br>• estimates, solves problems multiplying 1-digit by 3-digits or two 2-digit numbers (one a multiple of 10)<br>• solves single-digit divisor problems** |
| **Level II** | • exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • uses and compares decimals in the context of money but has difficulty with other decimal forms<br>• needs assistance to relating whole numbers, decimals, fractions<br>• reads and uses numbers up to a million with errors<br>• has difficulty with place value tasks involving zeroes<br>• rounds to left most digit; has difficulty rounding to other places<br>• needs assistance to model, compare unfamiliar proper, improper fractions, mixed numbers | • identifies some properties of 2-D and 3-D figures<br>• explores turns, flips, and slides with assistance<br>• models line segments, midpoints, intersections, parallel, perpendicular lines with assistance<br>• illustrates angles when provided a definition<br>• confuses parallel, perpendicular lines<br>• estimates, justifies, checks, interprets solutions | • needs assistance to identify, describe, use patterns to solve problems, make predictions<br>• makes, finds, extends patterns in tables inconsistently<br>• finds solution to open sentences using properties but with errors | • needs assistance to measure accurately<br>• solves measurement problems which follow specific models<br>• has difficulty comparing units within the same system<br>• needs manipulatives to solve time, money problems<br>• has difficulty estimating area, perimeter of irregular figures on grids | • begins to develop an organized approach to problem solving with teacher assistance<br>• tends to use a single strategy rather than a variety of methods for solving problems<br>• solves simpler problems, estimating and explaining results; has difficulty with two-step or non-routine problems<br>• has difficulty determining if there is sufficient data, selecting appropriate information to solve problems | • collects, organizes, displays data from various sources in a variety of ways with assistance<br>• forms questions, interprets information orally, in writing with assistance<br>• describes data using range, median, if definitions are provided<br>• names, plots ordered pairs with some errors | • models the processes of multiplication, division with direction<br>• recalls easier multiplication facts; relates to division facts but has difficulty with harder facts<br>• estimates and solves problems multiplying 1-digit by 3-digit numbers with some difficulty<br>• solves single digit divisor problems with assistance<br>• estimates, solves addition and subtraction including, decimals with some errors |
| **Level I** | • exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • uses models to represent proper fractions; has difficulty with improper, mixed, equivalent fractions<br>• shows limited conceptual understanding relating whole numbers, decimals, fractions<br>• is not proficient with previous year's objectives<br>• can model numbers with base 10 but does not apply understanding in other situations | • has limited geometric vocabulary; often confuses terminology<br>• creates models with assistance<br>• can name at least one property of familiar geometric figures | • uses simple patterns to solve problems with specific assistance<br>• does not use math properties to solve open sentences<br>• is not proficient with objectives in previous grades | • needs assistance to choose appropriate tools, measure accurately<br>• confuses units from different measurement systems<br>• has difficulty solving problems even with manipulatives<br>• has not mastered objectives from previous years | • demonstrates limited written, oral understanding of problems<br>• tends to use a single, concrete method in trying to solve problems<br>• has difficulty verifying, interpreting results<br>• creates inappropriate number sentences to represent everyday situations | • names and plots ordered pairs on a grids and maps with assistance<br>• lists, explains outcomes of coins tosses, number cubes, spinners with assistance<br>• needs assistance to collect, organize, display, use data | • has difficulty modeling addition and subtraction with renaming<br>• needs assistance in modeling simple multiplication and division<br>• demonstrates minimal fact recall<br>• rarely uses mental math<br>• has difficulty using decimals<br>• makes frequent errors in computation |



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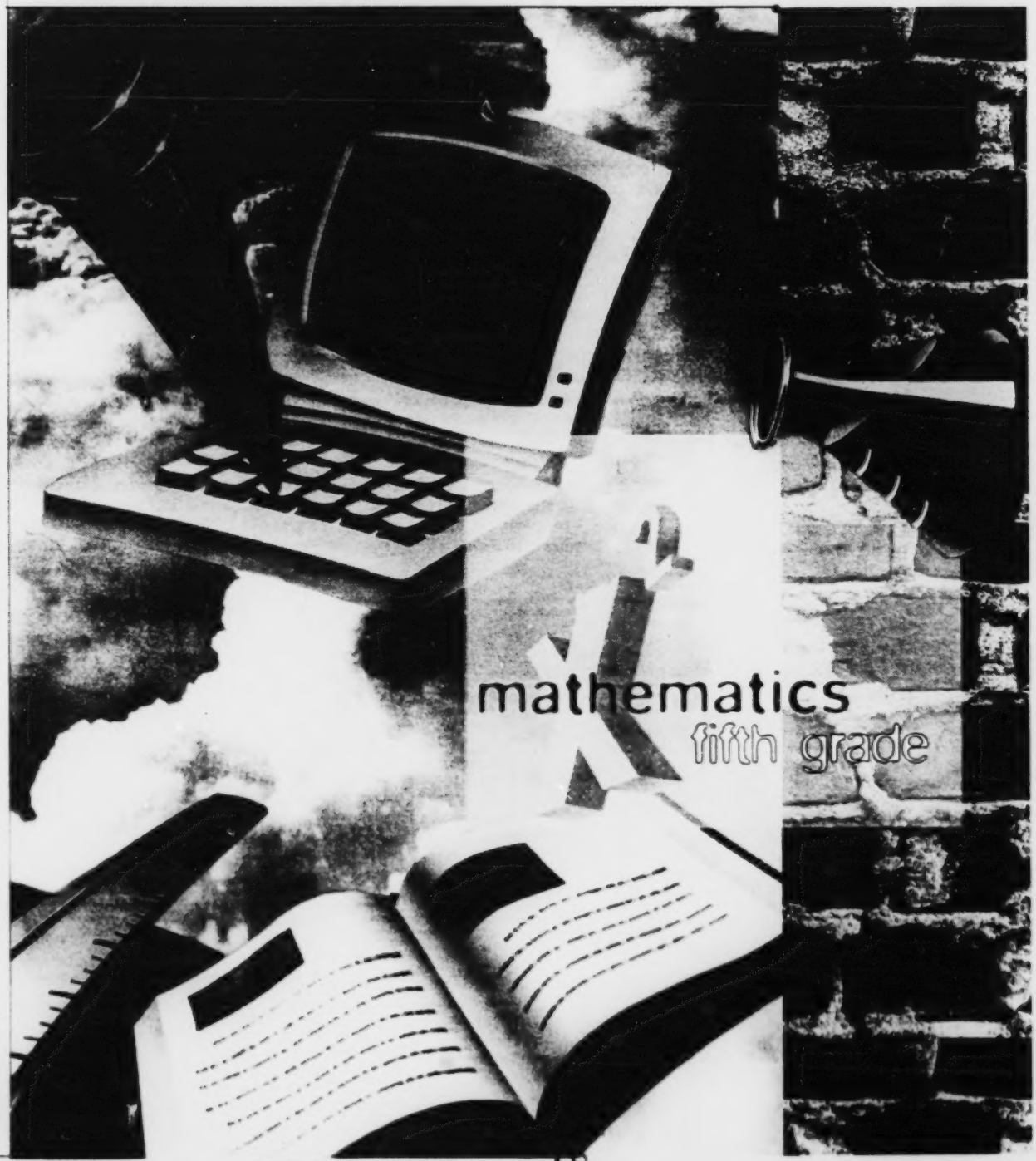
## Teacher Comments

# Fifth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation




Public Schools of North Carolina
State Board of Education • Department of Public Instruction

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# Fifth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| | Performance Indicators | Numeration | Geometry | Patterns | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|---|
| Level IV | • consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • applies place value skills in a variety of forms in real world situations<br>• uses whole numbers, decimals, and fractions interchangeably, using models or other representations as appropriate to the task<br>• recognizes the need for multiples, factors, exponential notation; applies appropriately<br>• uses prime factorization | • connects geometric ideas with everyday situations, showing insight into underlying concepts<br>• applies geometric principals when solving problems | • analyzes, explains, extends, applies patterns<br>• demonstrates sophisticated understanding of use of patterns and variables | • demonstrates understanding and use of measurement formulas for area, perimeter, volume<br>• analyzes and explains the relationship between perimeter and area, and area and volume<br>• demonstrates advanced understanding of relationships of units within same system by solving real-life problems | • analyzes and clearly communicates an understanding of problems and their solutions<br>• easily recognizes insufficient or extraneous data in a problem-solving situation<br>• justifies, interprets, and elaborates on problem-solving results with alternative strategies or applications as appropriate | • designs and completes complex data investigations<br>• uses and justifies appropriate measures of central tendency<br>• relates proportional representations on grids to ratio<br>• demonstrates understanding of probability by predicting, analyzing, explaining outcomes | • consistently successful with all operations involving whole numbers to 3-digits, fractions, and decimals both in isolation and in problem solving situations<br>• estimates, solves, and justifies solutions with ease<br>• demonstrates an understanding of the relationship among whole numbers, fractions, and decimals<br>• explains strategies for mental math with whole numbers |
| Level III (Proficient) | **• exhibits consistent performance<br>• shows conceptual understanding<br>• applies strategies in most situations<br>• responds with appropriate answer or procedure<br>• completes tasks accurately<br>• needs minimal assistance<br>• takes appropriate risks<br>• makes applications and extensions<br>• exhibits fluency<br>• shows some flexibility in thinking<br>• works with confidence<br>• recognizes cause and effect relationships<br>• can apply, model and explain concepts** | **• applies place value skills through millions<br>• relates exponential notation to repeated multiples<br>• determines, explains prime, and composite numbers<br>• names equivalent fractions; simplifies fractions<br>• reads, writes, uses decimals and fractions<br>• compares fractions using common denominators<br>• demonstrates, explains relationships of whole numbers, decimals, fractions using various representations<br>• shows understanding of factors, multiples;** | **• illustrates reflections, rotations, translations<br>• draws circles with a compass; identifies radius, diameter, chord, center, circumference<br>• describes relationships among radius, diameter, circumference<br>• models, compares, classifies polygons and polyhedra<br>• identifies, labels angles<br>• relates geometric concepts to other curricular areas<br>• uses a protractor to draw, measure angles** | **• identifies, understands, and describes patterns in various forms, including fractions and decimals<br>• uses patterns to solve problems, make predictions<br>• creates set of ordered pairs using a given rule; identifies rule to generate pairs given a set of pairs<br>• uses models to explore concept of variable** | **• uses models to show formulas for area and perimeter of squares and rectangles<br>• uses models to compare units of area within the same system<br>• uses models to compare units of volume<br>• describes relationships between perimeter and area and area and volume<br>• identifies relationships of units within the same measuring system<br>• solves problems using measurement applications** | **• solves multi-step problems from all strands in an organized way<br>• communicates understanding of problems<br>• determines if there is sufficient or extraneous information<br>• uses appropriate strategies to solve problems<br>• uses calculators and computers to solve problems<br>• verifies and interprets results of problem solving<br>• makes generalizations and applies them to new situations** | **• explains decisions in constructing graphs<br>• uses increasingly complex data investigations<br>• identifies range, median, mean, mode in describing data<br>• uses grids to demonstrate proportion<br>• plots points that represent ordered pairs<br>• investigates probabilities; uses fractions to describe the probability of events<br>• compares experimental, expected results for large sample sizes** | **• estimates products; multiplies 2-digit numbers<br>• explains division process; estimates, solves division problems (divisors single-digit or multiples of 10)<br>• explains what happens when zeros occur in computation<br>• models, adds, subtracts fractions (like denominators)<br>• computes averages in context<br>• estimates, adds, subtracts, and multiplies decimal numbers<br>• models and finds fractions of whole numbers<br>• demonstrates success with whole number operations with and without a calculator** |
| Level II | • exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • demonstrates limited understanding of place value skills<br>• demonstrates understanding of whole numbers, decimals, and fractions, but has a limited understanding of relationships among them<br>• demonstrates inconsistent understanding of primes, composites, factors, multiples<br>• has difficulty understanding exponential notation as a form of repeated multiplication | • has difficulty using compass, protractor shows limited knowledge of parts, relationships<br>• needs assistance in applying geometric concepts to other areas<br>• compares, classifies polygons, polyhedra; builds models with assistance<br>• demonstrates some understanding of transformations | • identifies, describes, uses patterns inconsistently<br>• has limited success in making generalizations<br>• has difficulty creating ordered pairs given rule;<br>• demonstrates limited understanding of variables | • shows limited ability to identify and demonstrate specific relationships of units within the same measurement system<br>• requires some assistance to solve problems using measurement applications<br>• has incomplete understanding of formulas for area, perimeter and relationships between perimeter area and area volume | • lacks organization in using appropriate strategies<br>• exhibits difficulty in communicating an understanding of problems<br>• makes limited use of calculators or computers as appropriate<br>• has difficulty applying strategies to new problems<br>• has difficulty in determining if information is sufficient or extraneous | • shows limited success in using and interpreting data displays<br>• confuses measures of central tendency<br>• requires assistance in exploring probability<br>• uses reduction or enlargement grids to explore proportion | • demonstrates uneven success with all operations<br>• has difficulty explaining the division process and with justifying and estimating solutions<br>• has difficulty computing with fractions<br>• has difficulty making appropriate estimates with whole numbers and decimals |
| Level I | • exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • has difficulty understanding place value<br>• has limited use of whole numbers, decimals, and fractions<br>• has considerable difficulty understanding prime and composite numbers<br>• confuses factors and multiples<br>• has not yet mastered many previous numeration objectives | • needs assistance to complete geometric objectives<br>• has a limited geometric vocabulary<br>• exhibits little knowledge of the attributes of 2-D and 3-D figures | • needs assistance in using patterns to solve problems<br>• has difficulty, requires assistance with ordered pairs, rules that govern them<br>• lacks understanding of variables | • requires considerable assistance in solving measurement problems<br>• requires frequent assistance to identify, demonstrate relationship of units within same or different systems<br>• has not mastered measurement skills | • fails to use appropriate strategies or uses them in incorrectly<br>• demonstrates difficulty in communicating understanding of problems; does not attempt to solve a problem due to a lack of comprehension<br>• fails to recognize if information is missing or extraneous<br>• needs adult or peer help in applying strategies and solving most problems | • has difficulty recognizing and using reduction or enlargement grids<br>• confuses range, median, mode, and mean<br>• needs assistance plotting points that represent ordered pairs of data<br>• needs assistance with data investigation | • makes frequent errors in computation with whole numbers and decimals<br>• has difficulty selecting operations in problem solving situations<br>• lacks conceptual understanding of fraction operations<br>• lacks understanding of estimation strategies |



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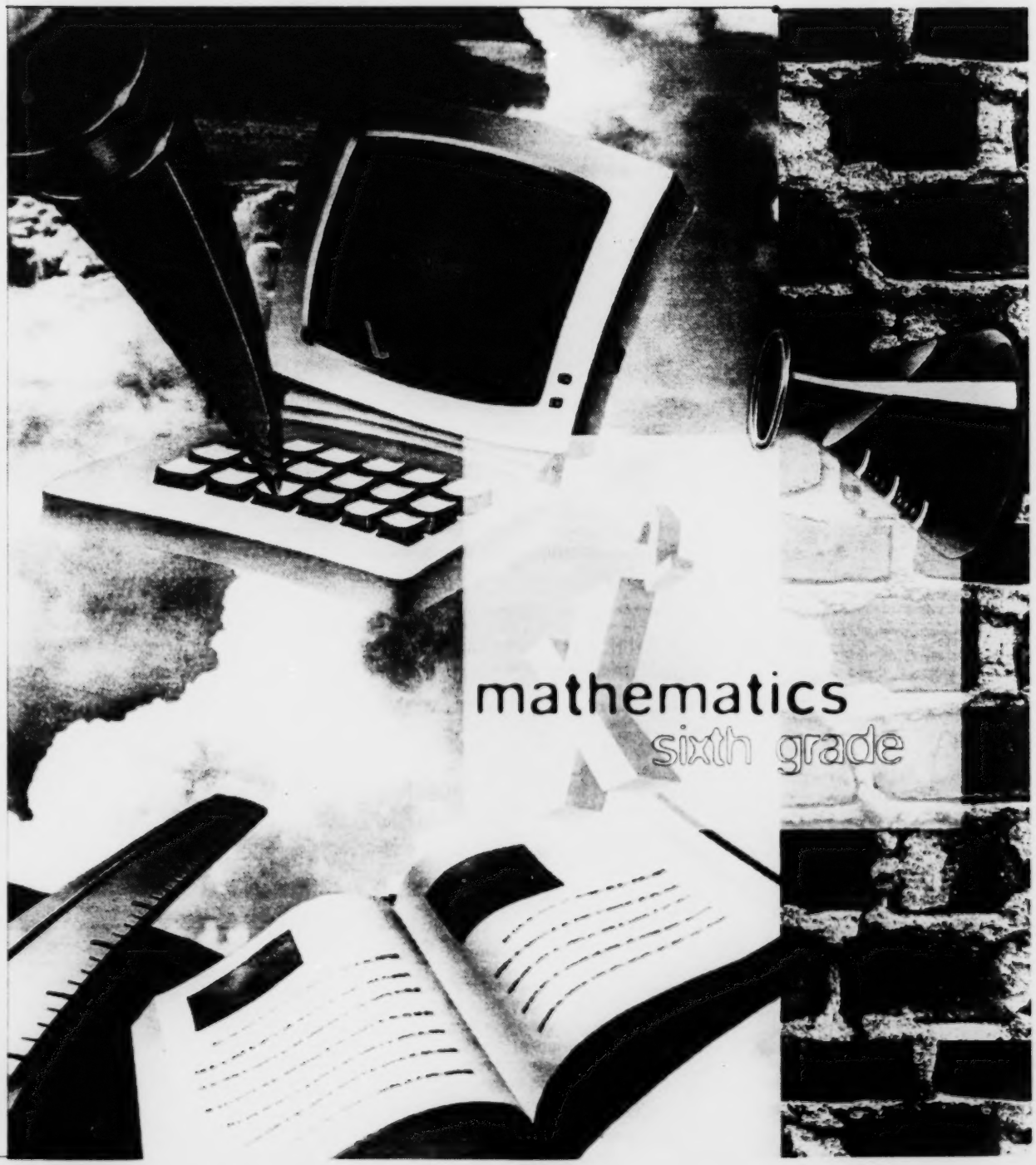
## Teacher Comments

# Sixth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation




Public Schools of North Carolina
State Board of Education • Department of Public Instruction

Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

# Sixth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| Performance Indicator | Numeration | Geometry | Pre-Algebra | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|
| **Level IV**<br>• consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • explains, extends relationships of ratios, proportions, percents in real world situations<br>• applies prime factorization to problem situations<br>• applies exponential notation as scientific notations<br>• explains and applies other number systems including binary numbers | • graphs transformations<br>• compares, contrasts relationships among similar, congruent, symmetric figures<br>• applies geometric constructions independently in extended projects<br>• identifies/explains applications of geometry | • applies and extends number patterns in problem solving situations<br>• explains relations of ordered pairs by formulating rules<br>• solves simple equations<br>• uses order of operations in more complex situations | • applies conversions of units of measure to real world situations<br>• provides accurate measures with confidence<br>• describes the relationship between models and formulas for areas of polygons.<br>• explains the effect on area and perimeter of a rectangle when dimensions are changed<br>• explores the effect on volume of rectangular solids when changing one or more dimensions | • uses independent and innovative strategies to solve non-routine and increasingly complex problems<br>• clearly communicates an understanding of the structure of problems and is able to elaborate upon solutions<br>• intuitively goes beyond mathematics that has been taught | • predicts outcomes from statistical data<br>• designs, explains original experiments to test theoretical probability<br>• makes inferences from spreadsheets<br>• makes generalizations based on statistical evidence | • selects, justifies appropriate strategies to solve complex problems, including operations with integers, percents<br>• uses ratios, proportions to solve a variety of problems<br>• applies and modifies mental math strategies to operations with rational numbers |
| **Level III (Proficient)**<br>• exhibits consistent performance<br>• shows conceptual understanding<br>• applies strategies in most situations<br>• responds with appropriate answer or procedure<br>• completes tasks accurately<br>• needs minimal assistance<br>• takes appropriate risks<br>• makes applications and extensions<br>• exhibits fluency<br>• shows some flexibility in thinking<br>• works with confidence<br>• recognizes cause and effect relationships<br>• can apply, model and explain concepts | • uses models to record, relate whole numbers, percents, fractions, decimals<br>• reads, writes, uses numbers in various forms including fractions, decimals, percents, exponential notation<br>• uses prime factorization to investigate common factors and multiples of numbers<br>• identifies integers in real life situations<br>• recognizes characteristics of other numeration systems<br>• uses models, pictures to show relationships among ratio proportions, percents | • describes, records properties of figures<br>• classifies angles and pairs of lines<br>• identifies transformations; explores topology<br>• constructs, uses congruent segments, angles, line segment bisectors<br>• recognizes applications of geometry in the environment<br>• names corresponding parts of similar, congruent, symmetric figures<br>• graphs on a coordinate plane | • uses patterns to explore rules for divisibility and as a strategy to solve problems<br>• uses graphs and tables to represent and describe relations of ordered pairs<br>• uses examples, models to represent concepts, properties of variables, expressions, equations<br>• uses order of operations correctly | • converts measures to other units in the same system<br>• uses measures successfully, determining necessary precision<br>• uses models to demonstrate formulas for area of plane figures; explores relationships of dimensions, areas of different figures<br>• uses models to develop concept of volume for rectangular solids<br>• estimates, solves problems related to volume | • analyzes problem situations and applies appropriate strategies for solutions<br>• uses inductive and deductive reasoning to solve problems<br>• selects appropriate methods for solving problems<br>• makes conjectures and arguments, and identifies various points of view<br>• solves non-routine, multi-step, and complex problems from all strands in an organized way | • designs, executes, evaluates, data investigations<br>• uses measures of central tendency to describe, compare unequal sets of data<br>• uses rational numbers to plot ordered pairs in all quadrants<br>• designs experiments to test probability; discusses implications<br>• explores spreadsheets<br>• estimates likelihood of events<br>• interprets real-life statistical statements | • translates word problems into number sentences using integers<br>• applies the concept of adding and subtracting integers in context<br>• uses mental math<br>• relates common fractions to frequently used percents; estimates, calculates using percents<br>• uses ratios and proportions to explore problems, including probability<br>• uses operations to solve problems with, without calculators<br>• uses estimation stategies and justifies estimates |
| **Level II**<br>• exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • demonstrates limited understanding of relating percent to fractions and decimals, records and reads them using models<br>• demonstrates some understanding of ratios, proportions, and percents using models<br>• has limited use of numbers in various forms including exponential notation, prime factorization, factors, multiples, integers<br>• lacks mastery of previous grade level objectives | • identifies congruent, symmetric, similar figures<br>• describes, records most obvious properties of geometric figures<br>• needs assistance with constructions<br>• has difficulty recognizing transformations<br>• limited recognition of the applications of geometry | • has difficulty identifying and using patterning as a strategy to solve problems<br>• represents number patterns and expressions, uses graphs and tables, models variables, uses divisibility but, inconsistently<br>• applies orders of operations with some errors | • has difficulty converting measures in same system, measuring precisely<br>• needs assistance with models to demonstrate volume<br>• is inconsistent in applying measurement, precision<br>• needs assistance to estimate solutions and solve problems related to volume of rectangular solids<br>• has a weak grasp of measurement terms | • has difficulty solving non-routine and complex problems with an organized approach<br>• needs assistance analyzing problem situations<br>• makes some appropriate selection of methods for problem solving<br>• can make conjectures and arguments and occasionally identify various points of view with guidance<br>• follows inductive and deductive reasoning when explained | • tests theoretical probability but has difficulty designing experiments<br>• interprets probabilities and statistical statements with varying precision<br>• has difficulty estimating probability<br>• confuses x and y axes, measures of central tendency<br>• needs assistance with spreadsheets | • inconsistently solves problems using multiplication and division<br>• needs assistance selecting appropriate strategies to solve problems<br>• has difficulty estimating results and applying appropriate operations<br>• with assistance adds, subtracts, multiplies and divides fractions, mixed numbers, but confuses operations<br>• has difficulty estimating percents, computing with integers |
| **Level I**<br>• exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • can sometimes read and record percent, fractions, and decimals but has limited knowledge of relationships among them<br>• has little or no understanding of ratios, proportions, and percents<br>• usually reads, writes, and uses numbers in various forms but has limited success choosing an appropriate form for a given task | • makes constructions only with assistance<br>• has difficulty recognizing, classifying geometric figures<br>• uses limited geometric vocabulary<br>• has not mastered objectives at earlier grades | • uses order of operations, divisibility rules, patterns to solve problems only with specific guidance<br>• creates simple tables; has difficulty describing rules<br>• needs assistance exploring models of variables | • does not measure precisely<br>• confuses volume, area, perimeter<br>• is unable to convert units within same system | • needs step-by-step explanations and assistance to solve on-grade level problems<br>• demonstrates few problem solving strategies<br>• has difficulty explaining solutions | • reads and interprets some graphical representations of data<br>• confuses measures of central tendency and range<br>• names ordered pairs in first quadrant<br>• explores probability through expenments | • limited use of whole number operations to solve real world applications even with calculators<br>• continues to have difficulty with fraction, decimal concepts, operations<br>• needs assistance with integer concepts and operations<br>• has difficulty linking classroom models to real world applications<br>• makes number facts errors |



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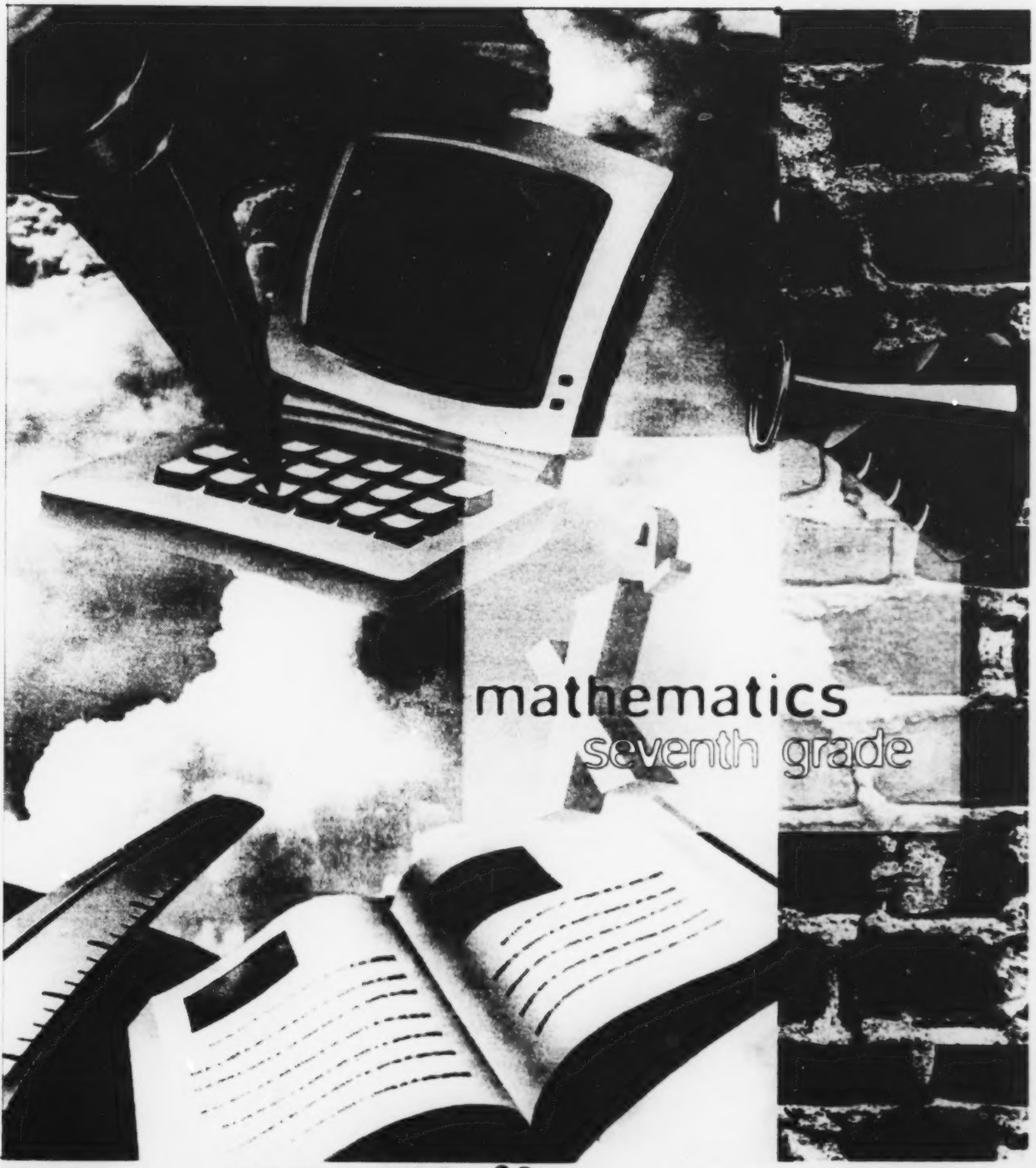
## Teacher Comments

# Seventh Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

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State Board of Education • Department of Public Instruction

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

## Seventh Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| Performance Indicators | Numeration | Geometry | Pre-Algebra | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|
| **Level IV**<br>• consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • uses estimation techniques without prompting<br>• uses squares, square roots in problem solving situations<br>• completes complex/multistep problems utilizing ratios, proportions and percent in meaningful contexts<br>• recognizes without prompting the need for and uses of positive and negative rational numbers | • recognizes the need for and accurately applies geometric concepts and relationships in problem solving situations<br>• explains, models of Pythagorean Theorem; applies to real world situations<br>• graphs complex shapes, transformations | • investigates, utilizes more complex patterns, i.e. fractals, Golden Ratio, Fibonacci Sequence<br>• conceptualizes operations with variables<br>• solves two-step equations<br>• applies expressions in real-life situations | • distinguishes between situations requiring estimation, precision<br>• explains accurately relationships between, among plane, solid figures<br>• chooses, uses formulas accurately | • recognizes need for and creates original models or graphics to aid in problem solving<br>• uses problem solving strategies to solve real world contextual problems creatively<br>• shows confidence and initiative in solving problems<br>• goes beyond the mathematics that has been taught<br>• formulates problems for more complex equations | • predicts how changes in data effects measures of central tendency, inferences, conclusions<br>• finds probability of independent, dependent events<br>• makes predictions based on experimental results, expectations theoretical<br>• selects most effective means of displaying data | • selects approropriate strategies and solves complex problems accurately using rational numbers consistently<br>• creates and analyzes models which represent situations across the curriculum and explains the rationale<br>• applies and modifiers mental math strategies to operations with national numbers |
| **Level III (Proficient)**<br>**• exhibits consistent performance**<br>**• shows conceptual understanding**<br>**• applies strategies in most situations**<br>**• responds with appropriate answer or procedure**<br>**• completes tasks accurately**<br>**• needs minimal assistance**<br>**• takes appropriate risks**<br>**• makes applications and extensions**<br>**• exhibits fluency**<br>**• shows some flexibility in thinking**<br>**• works with confidence**<br>**• recognizes cause and effect relationships**<br>**• can apply, model and explain concepts** | **• models positive, negative, rational numbers**<br>**• uses exponential notation to express prime factorization**<br>**• relates ratio, proportion, percent in contexts**<br>**• shows integration of numeration concepts across the curriculum**<br>**• relates standard form and scientific notation**<br>**• compares, orders, estimates rational numbers in real world situations; justifies strategies**<br>**• models squares, square roots geometrically; estimates, finds square roots with calculator** | **• constructs with straight edge, compass**<br>**• solves real world problems with geometric concepts, relationships**<br>**• models, uses Pythagorean theorem**<br>**• explains applications of geometry in environment**<br>**• builds models of 3-D figures given top, side, end views; draws model**<br>**• graphs congruent figures given translation of corresponding vertices** | **• uses concrete materials to develop the concepts of operations with variables; informal, formal methods to solve simple equations**<br>**• uses patterns to investigate patterns, solve problems;**<br>**• evaluates expressions using mental calculations, paper and pencil, calculators** | **• applies measurement concepts, skills; estimates, solve real-life problems**<br>**• makes accurate judgements about the precision**<br>**• uses models to develop concept, formulas for surface area of rectangular solids, cylinders**<br>**• uses models to develop concepts of volume for prisms, cylinders; relates volume of cone to cylinder, pyramid to prism** | **• uses organized approach and variety of strategies to solve increasingly complex, non-routine problems**<br>**• discusses alternative strategies, evaluates outcomes, makes conjectures, generalizations based on problem situations**<br>**• uses concrete, pictorial models spatial reasoning to solve problems**<br>**• solves problems involving interpretation of graphs**<br>**• uses technology, problem solving strategies as tools for daily living**<br>**• formulates problems from simple equations** | **• creates, evaluates different graphic representations of data, including box plots, scatter plot**<br>**• draws inferences, constructs arguments based on data analysis**<br>**• finds, explains probability of simple events experimentally, theoretically**<br>**• shows all possible outcomes in multiple ways; explores permulations, combinations**<br>**• investigates misuses of data** | **• selects appropriate operations, strategies, methods of solving application problems using positive rational numbers; justifies selection**<br>**• uses operations with integers in relevant problems**<br>**• estimates, solves real world problems (consumer applications, science, social studies) using ratio, proportion, percent; explains thinking**<br>**• computes accurately with or without calculator**<br>**• applies mental math strategies in operations with rational numbers** |
| **Level II**<br>• exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • uses models to represent integers<br>• compares, orders decimals; needs assistance with fractions<br>• is inconsistent using exponential or scientific notation<br>• uses estimation techniques inconsistently<br>• uses a calculator to find square, square root; has difficulty explaining concepts<br>• needs assistance with proportions | • needs assistance in constructions<br>• needs assistance solving problems using geometric relationships, concepts<br>• graphs figures on a coordinate plane using positive, whole numbers<br>• has difficulty drawing 3-D models<br>• limited recognition of the applications of geometry in the environment | • demonstrates some understanding of visual, numerical patterns, models of operations with variables<br>• demonstrates some understanding of concrete, informal, formal methods to model, solve equations<br>• evaluates expressions, verbalizes problems for simple equations | • applies measurement concepts, skills to basic problem solving situations with assistance<br>• demonstrates some understanding of precision and estimation of measurement<br>• uses manipulatives to find surface area, volume of rectangular prisms<br>• uses models with assistance to explore the relationship of the volume of cone to cylinder, pyramid to prism, with the same base and height | • uses limited strategies for solving routine problems<br>• has trouble with inferences, conjectures in relation to graphical data<br>• has difficulty comprehending complex problems, choosing appropriate strategies, and articulating outcomes<br>• solves problems using modeled processes but has difficulty applying variations of the processes | • is comfortable with simple representations of data; needs assistance to create, interpret complex data displays<br>• has difficulty recognizing misuse of data<br>• finds, explains experimentally probability of simple events; needs assistance determining theoretical outcomes<br>• does not recognize appropriate uses of measures of central tendency | • selects operations and strategies, solving a variety of simple application problems using positive rational numbers with assistance<br>• has difficulty explaining computational processes<br>• needs assistance to apply ratio, proportion, percents<br>• recognizes examples, models of operations with integers when demonstrated by others |
| **Level I**<br>• exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • uses rational numbers with limited accuracy<br>• has difficulty using estimation techniques<br>• does not grasp basic concepts of scientific and exponential notation, prime factorization, ratio, proportions, percent<br>• has not mastered objectives from previous levels | • has considerable difficulty making constructions<br>• does not see relationships between models and different views of a spatial figure<br>• confuses integers, x and y axes on coordinate plane<br>• has difficulty applying geometric concepts | • does not use patterns, relationships, concept of variables<br>• makes frequent errors modeling simple equations<br>• does not comprehend the procedures for evaluating algebraic expressions<br>• formulates inappropriate problems for simple equations | • is unable to solve problems which utilize measurement concepts and skills<br>• does not comprehend precision as it relates to measurement<br>• does not understand concept of surface area, volume<br>• does not recognize spatial figures and their relationships<br>• cannot estimate volume within reasonable parameters | • needs teacher, peer assistance to successfully solve most problems<br>• does not understand the relationship of a model to its problem frequently<br>• is unable to make reasonable conjectures and inferences<br>• exhibits little confidence when presented with a problem | • is successful with only simple data investigations<br>• needs assistance to select, display, use data appropriately<br>• conducts simple experiments, reports outcomes; has difficulty drawing conclusions<br>• exhibits confusion with permutations, combinations | • has difficulty solving problems accurately<br>• does not understand the concepts of ratio, proportion, percent<br>• has difficulty relating models of operations with integers and their symbolic representation<br>• does not know many number facts |



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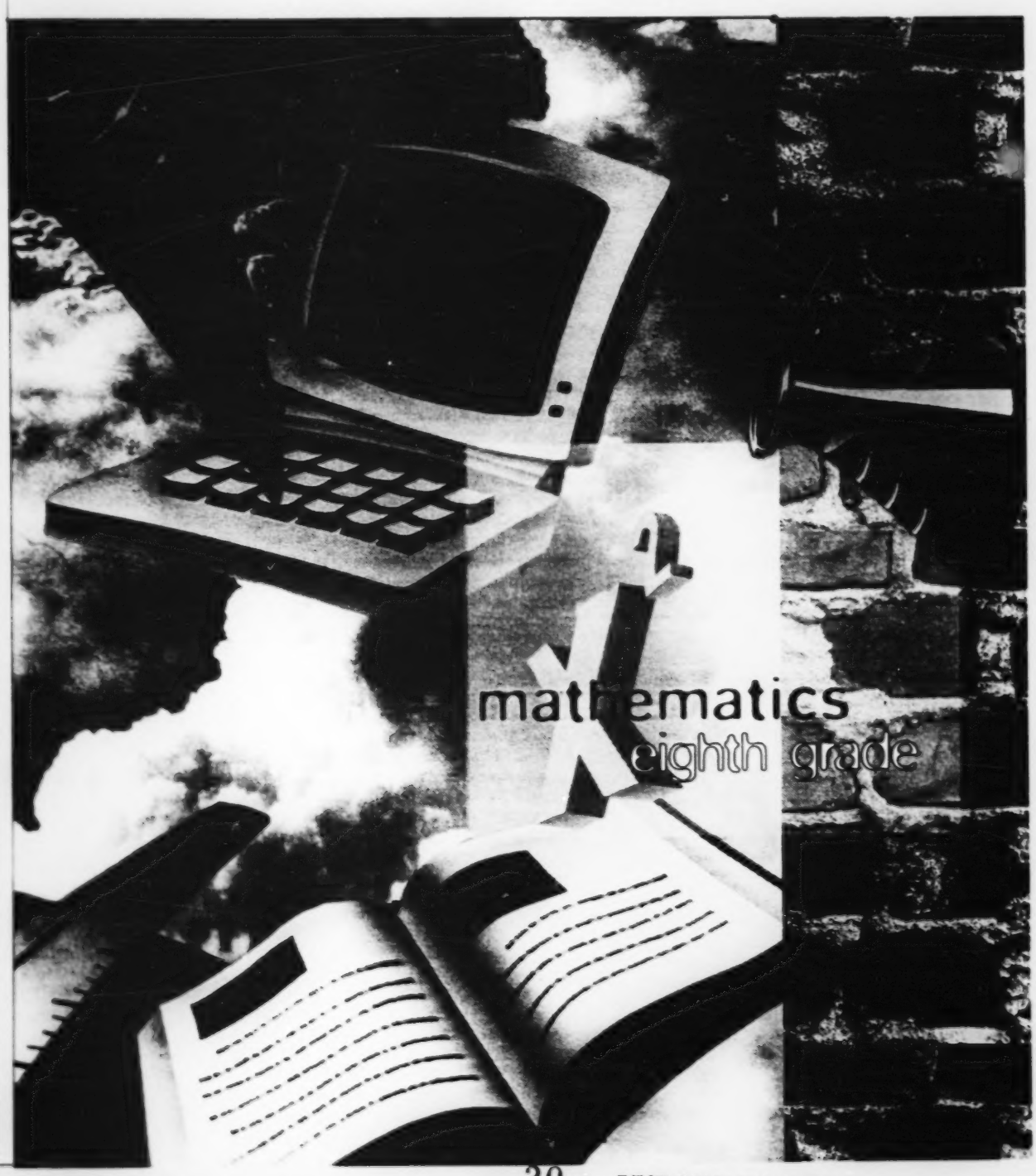
## Teacher Comments

# Eighth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

NAME _____

## Eighth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

| Performance Indicators | Numeration | Geometry | Pre-Algebra | Measurement | Problem Solving | Data | Computation |
|---|---|---|---|---|---|---|---|
| **Level IV**<br>• consistent performance beyond grade level<br>• works independently<br>• understands advanced concepts<br>• applies strategies creatively<br>• analyzes and synthesizes<br>• shows confidence and initiative<br>• justifies and elaborates responses<br>• makes critical judgements<br>• makes applications and extensions beyond grade level<br>• applies level III competencies in more challenging situations | • uses fractions and decimals interchangeably as fits the situation<br>• uses and justifies the appropriate form of a number for the given situation<br>• is equally comfortable using numbers in non-routine or unusual circumstances as in daily applications | • uses trigonometric relationships to solve problems with right triangles<br>• uses deductive as well as inductive methods to describe triangle congruency, properties of lines, applications of geometry | • demonstrates extensive knowledge of geometric and numerical patterns<br>• forms expressions or equations, substitutes, solves<br>• recognizes nonlinear equations | • is confident in estimating answers, determining precision, checking for reasonableness<br>• applies significant digits to real life situations<br>• provides clear and precise articulation of measurements and calculations<br>• devises formulas for surface area and volume of pyramids, prisms, cylinders, and cones | • explores different methods of solving problems; searches for alternative solutions<br>• shows confidence and initiative in problem solving, using calculators and computers when appropriate<br>• analyzes, synthesizes conjectures, arguments; uses deductive, inductive reasoning<br>• intuitively goes beyond mathematics that has been taught | • collects, displays, and analyzes data involving two variables<br>• identifies, explains factors which may influence results of investigations; suggests modifications | • consistently selects appropriate strategies and solves complex problems accurately using real numbers<br>• applies and modifies mental math strategies to operations with real numbers |
| **Level III (Proficient)**<br>• **exhibits consistent performance**<br>• **shows conceptual understanding**<br>• **applies strategies in most situations**<br>• **responds with appropriate answer or procedure**<br>• **completes tasks accurately**<br>• **needs minimal assistance**<br>• **takes appropriate risks**<br>• **makes applications and extensions**<br>• **exhibits fluency**<br>• **shows some flexibility in thinking**<br>• **works with confidence**<br>• **recognizes cause and effect relationships**<br>• **can apply, model and explain concepts** | • **uses and justifies appropriate estimation techniques in meaningful situations**<br>• **uses, defines laws of exponents; writes expressions in equivalent forms**<br>• **uses scientific notation to express whole numbers, numbers less than one; uses calculator appropriately**<br>• **uses a calculator to investigate irrational numbers**<br>• **describes the properties of terminating, repeating, and non-repeating decimals**<br>• **uses the number line to describe absolute value**<br>• **uses numbers in an accurate and appropriate manner** | • **uses the Pythagorean Theorem**<br>• **solves problems related to similar figures using indirect measures**<br>• **models triangle congruency**<br>• **solves problems relating geometric concepts to real world situations**<br>• **draws 3-D figures from different perspectives**<br>• **graphs transformations in all quadrants on a coordinate plane**<br>• **models relationships created by transversals cutting parallel lines** | • **uses geometric, numerical patterns, algebraic methods to solve problems with rational numbers**<br>• **uses, explains properties with variables**<br>• **analyzes data with tables, graphs, verbal rules, equations**<br>• **produces, graphs, ordered pairs from equations** | • **estimates answers, determines precision, checks reasonableness of results**<br>• **determines the number of significant digits and the greatest possible error in measurement situations**<br>• **selects appropriate unit, tool to measure based upon accuracy required, nature of problem**<br>• **determines the surface area and volume of pyramids, prisms, cylinders, and cones with and without models**<br>• **explores effects on plane, solid figures when dimensions are changed** | • **uses an organized approach and a variety of strategies to solve increasingly complex non-routine problems**<br>• **uses calculators and computers when appropriate in problem solving**<br>• **uses deductive, inductive reasoning to make, evaluate conjectures, arguments**<br>• **investigates open-ended problems, formulates questions, and extends the problem solving process**<br>• **represents situations verbally, numerically, graphically, geometrically, or symbolically**<br>• **uses proportional reasoning** | • **designs investigations, collects data,chooses most appropriate display, interprets results, draws conclusions with respect to original question**<br>• **finds, uses experimental, theoretical results to make predictions, decisions**<br>• **evaluates arguments; investigates bias**<br>• **recognizes appropriateness, inappropriations of data presented in real-life contexts** | • **selects (justifying the selection) appropriate operations, strategies, and methods of solving problems using real numbers**<br>• **applies the laws of exponents and solves problems in meaningful situations**<br>• **consistently computes accurately with and without a calculator**<br>• **uses mental math strategies without prompting** |
| **Level II**<br>• exhibits inconsistent performance and misunderstandings at times<br>• shows some evidence of conceptual understanding<br>• has difficulty applying strategies in unfamiliar situations<br>• responds with appropriate answer or procedure sometimes<br>• occasionally completes tasks appropriately and accurately<br>• requires teacher guidance frequently<br>• needs additional time, opportunities<br>• demonstrates some level III competencies but is inconsistent | • can give examples of irrational numbers but may not be able to explain<br>• identifies terminating, repeating, and non-repeating decimals<br>• demonstrates limited understanding of the relationship between absolute value and number line<br>• gives examples to illustrate types of numbers; unable to explain underlying concepts<br>• applies estimation techniques inconsistently | • solves problems dealing with similar figures with setup assistance<br>• needs assistant reading or drawing views of 3-D figures applying Pythagorean Theorem, describing attributes of congruence, generalizing relationships among angles formed by parallel lines<br>• describes, makes transformations, graphs on coordinate plane with some errors | • evaluates expressions with specific directions<br>• analyzes simple data sets<br>• solves whole number equations algebraically | • estimates answers with some understanding of reasonableness of results<br>• determines with assistance effect on plane, solid figures when dimension is changed<br>• evaluates surface area and volume of pyramids, prisms, cylinders, and cones with the aid of a calculator and formulas<br>• shows some understanding of inaccuracies in measurement | • uses a limited number of strategies to solve problems<br>• suggests reasonable conjectures and arguments with some teacher guidance<br>• investigates open-ended problems, but has difficulty formulating questions and extending the problem solving process<br>• represents situations in a limited number of ways<br>• solves problems involving proportions by creating and extending patterns | • demonstrates understanding of on-grade level competencies but is inconsistent, often lacking attention to detail, when completing experiments, investigations<br>• states obvious conclusions; overlooks other factors in explanations | • uses the laws of exponents but with some difficulty and errors<br>• with assistance solves problems using real numbers<br>• uses a limited number of mental math strategies<br>• makes errors in computing (sometimes with process and sometimes with facts) |
| **Level I**<br>• exhibits minimal performance<br>• shows very limited evidence of conceptual understanding and use of strategies<br>• responds with inappropriate answer and/or procedure frequently<br>• very often displays misunderstandings<br>• rarely completes tasks appropriately and accurately<br>• needs assistance, guidance and modified instruction | • cannot translate numbers from one form to another<br>• has an incomplete understanding of the number system as demonstrated by many inaccuracies<br>• uses estimation techniques inaccurately<br>• performs similar to students in earlier grades | • applies Pythagorean Theorem with specific step-by-step guidance<br>• has difficulty relating verbal, written descriptions to graphical representations<br>• has minimal understanding of middle grades geometric concepts; needs assistance when applying formulas | • needs additional experiences prior to formal algebra<br>• graphs ordered pairs; little understanding of relationships<br>• has little understanding of concept of variables | • estimates the answer without understanding<br>• determines significant digits occasionally<br>• has difficulty using measurement tools, reporting results accurately<br>• confuses surface area, volume of solid figures | • uses a calculator to solve routine problems<br>• needs modified instruction to investigate questions and to solve many problems<br>• has difficulty representing problem situations or making reasonable conjectures and arguments; lacks confidence in own abilities | • makes frequent errors in data investigations when working independently<br>• has not yet mastered objectives in earlier grade levels | • has difficulty using exponential notation<br>• has difficulty setting up problems<br>• makes frequent errors in computation<br>• does not know many number facts<br>• rarely use mental math strategies |



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## Teacher Comments